

Claims

- [c1] 1. A fabrication method for a silicon oxide/silicon nitride/silicon oxide structure layer, comprising:
forming a first silicon oxide layer over a substrate;
forming an interface layer over the first silicon oxide layer;
forming a silicon nitride layer over the interface layer;
and
forming a second silicon oxide layer over the silicon nitride layer.
- [c2] 2. The method of claim 1, wherein the interface layer is formed by performing a surface treatment process on the first silicon oxide layer in a nitrogen ambient.
- [c3] 3. The method of claim 1, wherein the interface layer is formed by exposing the first silicon oxide layer to ammonium.
- [c4] 4. The method of claim 1, wherein the interface layer is formed under a pressure of about 10 torr to about 80 torr.
- [c5] 5. The method of claim 1, wherein the interface layer is formed at a temperature of about 650 degrees to about

800 degrees Celsius for about 1 hour to 2 hour.

[c6] 6. The method of claim 1, wherein the interface layer is formed at a temperature of about 650 degrees to about 1100 degrees for about 30 seconds to about 90 seconds in a nitrogen ambient.

[c7] 7. The method of claim 1, wherein the interface layer is about 20 angstroms thick.

[c8] 8. The method of claim 1, wherein the interface layer comprises silicon oxynitride.

[c9] 9. The method of claim 1, wherein the interface layer serves as a seed layer for forming the silicon nitride layer.

[c10] 10. A fabrication method for a silicon oxide/silicon nitride/silicon oxide structure layer, comprising:
forming a first silicon oxide layer over a substrate;
performing a surface treatment process over the silicon oxide layer to convert a surface of the silicon oxide layer to a thin silicon oxynitride layer;
forming a silicon nitride layer over the surface-treated silicon oxide layer; and
forming a second silicon oxide layer over the silicon nitride layer.

- [c11] 11. The method of claim 10, wherein the surface treatment process is conducted with ammonium.
- [c12] 12. The method of claim 10, wherein the surface treatment process is conducted at a temperature of about 650 degrees Celsius to about 800 degrees Celsius for about 1 to 2 hours.
- [c13] 13. The method of claim 10, wherein the surface treatment process is conducted at a temperature of about 650 degrees Celsius to about 1100 degrees Celsius for about 30 to 90 seconds.
- [c14] 14. The method of claim 10, wherein the surface treatment process is conducted under a pressure of about 10 torr to about 80 torr.
- [c15] 15. The method of claim 10, wherein the thin silicon oxynitride layer is about 20 angstroms thick.